In the Claims:

Please amend Claims 1, 2, 27, and 38. A complete copy of the claims including

marked-up versions of each claim which is amended in this Amendment D appears

below.

1   1.   (Currently Amended) A solid state laser gain medium having first and second ends

2   along a laser optical axis in which each end is profiled concave to provide a level of

3   thermal lens compensation at a desired operating pump power such that the beam has a

4   beam quality factor M^2 maximized at the desired operating pump power, wherein the

5   solid state laser gain medium is ~~operable~~ configured to operate in a laser oscillator cavity

6   that is optically symmetrical and includes flat cavity end reflectors.

1   2.   (Currently Amended) A solid state laser gain medium as defined in Claim 1,

2   wherein the solid state laser gain medium is ~~operable~~ configured to operate in a laser

3   oscillator cavity arranged to incorporate a Q-switch or further gain modules.

1   3.   (Previously Presented) A solid state laser gain medium as defined in Claim 1, in

2   which the solid state laser gain medium is formed of Nd:YAG.

1   4.   (Previously Presented) A laser oscillator cavity including a solid state laser gain

2   medium as defined in Claim 1.

5.   (Cancelled).

1   6.   (Previously Presented) A laser oscillator cavity as defined in Claim 4, further

2   comprising:

3   a Q-switch having first and second acousto-optic cells in respective first and

4   second non-parallel polarization orientations, wherein at least one of said first and second

5   acousto-optic cells has a reflective end forming a cavity end reflector.

7.   (Cancelled).

1   8.   (Previously Presented) A laser oscillator cavity as defined in Claim 4, further

2   comprising:

3   a frequency converter; and

4   a frequency selective reflector between the solid state laser gain medium and the

5   frequency converter.

1   9.   (Previously Presented) A laser including a solid state laser gain medium as defined

2   in Claim 1.

1   10.   (Previously Presented) A laser as defined in Claim 9, further comprising:

2   a side-pumping diode element.

11-22. (Cancelled).

1   23.   (Previously Presented) A laser ablation device comprising a laser as defined in

2   Claim 9.

24-25. (Cancelled).

1   26.   (Previously Presented) A laser amplifier including a solid state laser gain medium

2   as defined in Claim 1, said laser amplifier further comprising:

3   a laser cavity; and

4   an amplifying module external to the laser cavity, said amplifying module sharing

5   a common axis of emission with said laser cavity and comprising an amplifier gain

6   medium having first and second ends along said axis of emission;

7   whereby at least one of said first or second ends of said amplifying module is profiled to

8   produce a lensing effect so as to directly couple light from said laser cavity into said

9   amplifying module.

1   27.   (Currently Amended) A laser amplifier as defined in Claim 26, wherein one or

2   both of said first or second ends of said amplifying module are profiled to form an

3   amplifier lens having a predetermined focal length in order to maximize the beam quality

4   factor M^2 of the laser cavity at a desired pump power, and wherein the amplifier lens is

5   one of a refractive lens, a diffractive lens, or a GRIN lens.

28-30. (Cancelled).

1   31.   (Previously Presented) A laser amplifier as defined in Claim 27, wherein said at

2   least one end of said solid state laser gain medium is profiled to form a first lens having a

3   focal length that is substantially equal to the focal length of said amplifier lens.

1   32.   (Previously Presented) A laser amplifier as defined in Claim 26, whereby said

2   laser gain medium lens and said amplifier gain medium lens are concavely profiled.

1   33.   (Previously Presented) A laser amplifier as defined in Claim 26, wherein said laser

2   gain medium and said amplifying gain medium are pumped simultaneously, and wherein

3   said laser gain medium pump and said amplifying pump have equal power.

34.   (Cancelled).

1   35.   (Previously Presented) A laser amplifier as defined in Claim 26, in which an input

2   surface to the amplifying module is tilted.

36.   (Cancelled).

1   37.   (Previously Presented) A laser amplifier having:

2   a laser cavity; and

3   an amplifying module external to the laser cavity, said amplifying module sharing

4   a common axis of emission with said laser cavity and comprising a laser gain medium

5   having first and second ends along said axis of emission;

6   whereby at least one of said first or second ends is profiled so as to directly couple light

7   from said laser cavity into said amplifying module;

8   wherein said laser gain medium and said amplifying medium are pumped simultaneously;

9   wherein in said module for an amplifier medium comprising a rod of diameter D_R, length

10   L_R, refractive index n_L, refractive index of air n_{air}, and thermal focal length f_{th} arranged

11   to receive an input beam from a laser having waist distance d_0 from the input rod end,

12   the rod is profiled with a radius of curvature R given approximately by

13   $$R = \frac{d_0 (4 f_{th} - L_R)(n_L - n_{air})}{n_L (4 f_{th} - L_R - 2 d_0)} .$$

1   38.   (Currently Amended) A method of making a solid state laser gain medium having

2   first and second ends and further comprising flat cavity end reflectors along a laser

3   optical axis, said solid state laser gain medium being for use in an optically symmetrical

4   laser oscillator cavity arranged to produce a laser beam, said method comprising:

5   profiling concavely each end of the solid state laser gain medium to provide a

6   level of thermal lens compensation at a predetermined operating pump power in order to

7   maximize the beam quality <u>factor M^2</u> of the beam at said desired operating pump power.

1   39.   (Previously Presented) A method of designing a laser amplifier having a profile as

2   defined in Claim 37.

40-42. (Cancelled).

1   43.   (Previously Presented) A laser assembly comprising a gain medium as defined in

2   Claim 1 and an amplifier as defined in Claim 26 coupled therewith.

1   44.   (Previously Presented) A module as defined in Claim 33, in which, for an

2   amplifier medium comprising a rod of diameter D_R, length L_R, refractive index n_L,

3   refractive index of air n_{air}, and thermal focal length f_{th} arranged to receive an input beam

4   from a laser gain medium having waist distance d_0 from the input rod end, the rod is

5   profiled with a radius of curvature R given approximately by $R = \dfrac{d_0(4f_{th} - L_R)(n_L - n_{air})}{n_L(4f_{th} - L_R - 2d_0)}$.